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ABSTRACT

Four promising programs for raising student achievement are described. All four attempt schoolwide improvement and primarily affect curriculum and pedagogy. Each program has its own strengths and weaknesses, but they all show evidence of: (1) high standards; (2) effectiveness; (3) replicability; and (4) support structures. Success for All, an elementary school program, is a schoolwide restructuring program that affects curriculum pedagogy, scheduling, resource allocation, professional development, and family support services. A clear commitment on the part of administrators and a ballot endorsement by at least 80% of the school staff are required before the school can participate in this program of intensive academic assistance. "High Schools That Work" is a project designed to help states raise the academic achievement of career-bound students. It has historically worked with and through state education departments. The program provides a framework, technical assistance, and a support network to help schools make necessary changes in curricula, scheduling, resource allocation, and professional development. "Direct Instruction" is a highly structured instructional approach designed to accelerate the learning of at-risk students. Although it is primarily an elementary school program, it has been used at secondary, adult, and remedial levels. It is a commercially published program for individual grades and subjects. "Core Knowledge" is a sequence designed to add content to the general skills and objectives typically found in state and local curriculum guides to provide a common core of knowledge in the early grades. For each of these programs, information is provided in the areas of: (1) main features; (2) results; (3) case studies; (4) considerations; and (5) publications and resources. A list of 16 additional reading materials is included. (Contains three references.) (SLD)

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Building on the Best, Learning from What Works

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Four Promising Schoolwide Academic Programs

American Federation of Teachers

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Building on the Best: Learning from What Works

The AFT has gained many allies in the fight to educate all students to high academic standards. President Clinton has made standards a top priority, and virtually every state has begun to take action. Where standards-based reforms have been in place, progress is being made. Yet there remains sharp debate over the future of public education.

Invoking the specter of failing schools, the advocates of vouchers and privatization are more strident than ever. But their solutions are just the latest additions to the long list of unproven schemes that have plagued our schools. The real hope for improving public education is by expanding the reach of those programs and strategies that have a track record of effectiveness—not by gambling on vouchers or privatization.

We know that our students are as capable as any in the world. We know that, given the standards-based reforms that we advocate—and the research-based strategies that can help students meet those standards—our public schools can match or surpass the accomplishments of the highest-achieving nations.

This series, which grew out of the work of the AFT Task Force on Improving Low-Performing Schools, is an attempt to help advance these reform efforts. It was designed to provide members with detailed background information about the research-based programs that, when properly implemented, show promise for helping to raise academic achievement, especially for struggling students.

While each low-performing school has a somewhat different set of needs and priorities, the AFT believes that no school—especially one that is already foundering—should be expected to find success by reinventing the wheel. Instead, once the school's most pressing problems have been identified, the improvement process should focus on enabling the faculty to choose among those programs and instructional practices that have a solid base of research showing positive results. This series, therefore, aims to help school staff become educated consumers of educational programs and practices.

In recent months, educators, members of Congress, and the general public have devoted increased attention to these issues. We hope that this focus will spur new program development efforts—together with the careful field tests that can help demonstrate the effectiveness of fledgling programs—which should mean that a broader range of good options will soon be available.

Here, we describe four promising schoolwide academic programs.

Four Promising Programs For Raising Student Achievement

Why are some schools effective at educating most students, even those from disadvantaged, high-poverty areas, while others struggle fruitlessly to fulfill their academic mission? How can schools replicate the successes of their more effective counterparts?

Researchers, working for years to answer these questions, have described the characteristics of successful schools—e.g., high expectations for all students; challenging curricula; clear standards and a coherent, focused academic mission; high-quality professional development aligned to the standards; small class sizes, especially in the early grades; an orderly and disciplined learning environment; a supportive and collegial atmosphere; and an intervention system designed to ensure that struggling students can meet the standards. But, while we now know a great deal about *which* reforms are effective, comparatively little is known about *how* to achieve them.

As many schools have found out the hard way, systemic reform is extremely difficult—especially when it must occur simultaneously on many fronts, and is begun without benefit of high-quality curriculum materials, appropriate professional development, or readily available technical assistance. In fact, a number of schools—especially those that are already foundering—have found that lasting improvement is impossible without concrete, step-by-step implementation support.

According to a recent study of efforts to raise academic achievement for at-risk students (Stringfield, et al., 1996), the reform strategies that achieve the greatest academic gains are those chosen and supported by faculty, as well as administrators. Success is also dependent on the existence of a challenging curriculum, and on paying "a great deal of attention to issues of initial and long-term implementation, and to institutionalizing the reforms." This and other studies have also found that schoolwide reforms tend to be more effective than pull-out or patchwork programs, and that externally developed programs—particularly those with support networks from which schools can draw strength and tangible assistance—tend to do better than local designs.

Given these and similar research findings, we developed the criteria below to help identify promising programs for raising student achievement, especially in low-performing schools. You will find descriptions of four of these programs on the following pages.

All four programs attempt *schoolwide* improvement, offer the kinds of materials, tools and training that increase the likelihood of effective replication, and primarily affect curriculum and pedagogy—the areas over which faculty have the most control. Although each particular program has its own strengths and weaknesses, all show evidence of:

- **High Standards.** The program helps all students acquire the skills and/or knowledge they need to successfully perform to high academic standards.
- **Effectiveness.** The program has proven to be effective in raising the academic achievement levels of "at-risk" students in low-performing schools, based on *independent* evaluations.
- **Replicability.** The program has been *effectively* implemented in multiple sites beyond the original pilot school(s).
- **Support Structures**. Professional development, materials, and ongoing implementation support are available for the program, either through the program's developer, independent contractors, or dissemination networks established by schools already in the program.

Success for All (SFA)

Grades Covered	Elementary/K-6.
Curriculum Materials	Curriculum guides, curriculum materials, children's literature, daily lesson plans, and teacher manuals are provided for grades K-6 in reading, writing, and language arts.
Instructional Support/ Professional Development	Through lesson plans and teachers' manuals, specific instructional guidance is provided for each part of the curriculum. Professional development is also provided as part of the basic cost of the program, with pre- and post-implementation workshops for all instructional staff. In addition, advanced training is provided for the principal and a "program facilitator," who works as an on-site coach/coordinator in the school.
School Reform/ Restructuring Assistance	This is a schoolwide restructuring program that affects curriculum, pedagogy, scheduling, resource allocation, professional development, and family support services. To help ensure success, a clear commitment on the part of administrators and a secret ballot endorsement by at least 80 percent of the school staff are required parts of the application process. Once accepted, schools receive implementation assistance and training, as well as continuing support through a "network" with researchers and other SFA schools.
Role of Paraprofessionals	To some extent, the deployment of classroom paraprofessionals is determined at the school level. SFA recommends their use as classroom aides in pre-K and K and as one-on-one tutors working under the direction of certified teachers with students with mild reading difficulties.
Cost of Implementation	Most Success for All schools have funded the program as a Title I schoolwide project. For a school with 500 students, SFA estimates the first-year implementation costs to be $90-$100 per student for training, materials, and follow-up visits.[1] If the facilitator, tutor, and other SFA-related staff positions cannot be filled by a redeployment of existing staff, the costs related to the hiring of additional staff may range between $450 to $1,100 per student.
Results*/Effect Size[2]	Reading (+.34 to +.82); Word Attack (+.51 to +4.22).[3] * *To give a sense of scale, an effect size of +1.00 would be equivalent to an increase of 100 points on the SAT scale or 15 points of IQ—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (the norm for mainstream students).*

Success for All (SFA) is an elementary school restructuring program, designed to deliver intensive academic assistance to student populations at risk of school failure. Developed in the mid-1980s by Dr. Robert Slavin, a researcher at Johns Hopkins University, SFA will be in place in more than 750 (mostly high-poverty, Title I) schools across the country, as of Fall 1997.[4] Because learning to read has been shown to be critical for academic success, the program was built around research into

the most effective ways to teach reading and strategies to catch and correct problems early.

Main Features

Reading and Writing Program—The core of Success for All is a reading curriculum that incorporates research-based instructional practices, including cooperative learning. In kindergarten and grade 1, the program emphasizes reading readiness and the development of oral language. Students work on phonemic awareness activities to help develop auditory discrimination; become familiar with books, letters and phonetically regular words; and listen to, retell, and dramatize children's literature and thematic units based in science and history. When students reach the primer level, they use an adaptation of another Johns Hopkins University-developed program: Cooperative Integrated Reading and Composition (CIRC). In addition to receiving direct instruction from teachers in reading comprehension and writing, SFA and CIRC students engage in cooperative learning activities built around oral reading in pairs, structured discussion, summarization and retelling of stories, vocabulary building, decoding practice, and story-related writing. Detailed teachers' manuals and support materials, through grade 6, are built around children's literature and the most widely used basals and anthologies. Classroom libraries of trade books at the students' reading level are provided to each teacher, along with support materials.

Reading Groups—Although heterogeneous, age-grouped classes are conducted most of the day, students in grades 1-3 (and sometimes 4-5 or 4-6) are regrouped for reading. A common 90-minute reading period is established across grades, during which students are regrouped by reading performance level. By establishing a common period and using all certified staff (including tutors, librarians, art teachers, etc.), class size for these groups is substantially below the size of homeroom classes. By eliminating the need for multiple reading groups, direct instruction time is increased and student busywork is decreased, thus accelerating the pace of learning.

Frequent Assessments—Every eight weeks, reading teachers assess student progress using personal observations and curriculum-based and formal measures. Teachers use the results of these assessments to identify students who are falling behind and need extra help and tutoring, as well as those who are progressing quickly and should be placed in a higher performance group. At the same time, teachers attempt to identify students who need other types of assistance, such as family interventions or screening for hearing or vision problems.

Tutors—Another important element in the program is the use of one-on-one tutoring, the most effective form of instruction for students with reading problems. Tutors are certified teachers who are reading specialists or have experience teaching Title I or special education students. Trained paraprofessionals may also be used for students with less severe reading difficulties, under direction of the certified tutor. Children with reading difficulties are tutored during a 20-minute period during the day when neither reading nor math is being taught in class. To prevent problems from developing and to minimize the number of older students needing remediation, first-grade students are given priority for tutoring. Certified tutors also act as regular reading teachers during the 90-minute reading periods.

Program Facilitator—Another key element of the program is the use of a program facilitator at each school. A member of the school staff who is released from regular classroom responsibilities, the facilitator works (with the principal) to oversee the details of implementation, including scheduling changes and professional development arrangements. The facilitator also monitors the implementation of the curriculum in the classroom and is available to assist/coach individual teachers and tutors through any problems. He or she also helps deal with student behavior problems and acts as a liaison between the staff and the family support team.

Training—The professional development provided by Success for All includes a brief orientation and training period, in-class coaching and assistance, and periodic inservice workshops and discussion groups. In the first year of implementation, three days of inservice training are provided for all teachers, tutors, and classroom paraprofessionals at the beginning of the school year. The initial training for both the facilitator and the principal is more comprehensive, usually a week-long training session at Johns Hopkins University. Throughout the year, researchers make frequent site visits during which

they make classroom observations, meet with staff, and conduct inservice training. Facilitators also arrange sessions for staff to share information, discuss problems and solutions, and collaborate on the needs of individual children.

Family Support Team—The family support team consists of the facilitator, parent liaison (if any), counselor (if any), principal or vice principal (if any), and any other staff the school deems appropriate. The team promotes parental involvement in the school—providing information, organizing school-related activities, and conducting workshops for parents. It also intervenes to help solve behavior and other problems, acts as a resource for teachers and parents, and helps coordinate services with community-based health, social service, and juvenile justice agencies.

Results

Not only is Success for All designed around research into effective teaching methods, but the program itself has an extensive body of research demonstrating its effectiveness. Statistically significant positive effects have been found on every measure from grades 1 to 5, with especially large gains for students most at risk for failure. These effects have also been shown to be cumulative: While first-grade SFA students are about three months ahead of matched control students in reading, by the fifth grade, they outscore control students by an average of a full grade level. Bilingual students and students in the lowest quartile of their grades average even higher gains, with effect size changes of +1.00 or more (*see footnote 2*).

The program has also been found to cut special education placements in half, on average, and one study found that the program eliminated the black-white achievement gap.

Case Studies

Baltimore, Maryland. The birthplace of Success for All, Baltimore has five of the longest-running SFA implementations in the country. The schools are located in inner-city, predominantly African-American neighborhoods, with between 75 percent to 96 percent of students eligible for school lunch subsidies. On average, SFA schools outperform control schools in the city at every grade level. For example, CTBS scores for SFA and control schools were collected during the 1992-93 school year. By the fifth grade, SFA students were found to be 75 percent of a grade equivalent ahead of control students on the CTBS Total Reading assessment. Evaluations have also found positive effects on attendance and retention rates.

Houston, Texas. In Houston, a recent experiment in the large-scale replication of Success for All has also shown positive results. What began in 1993 as a special summer school program, offered by the school district, was quickly expanded into a reform option for all elementary schools. By the 1994-95 school year, more than 70 schools had chosen to participate. Unfortunately, with the quick start-up, many schools did not receive the necessary training and materials before the beginning of the school year. Despite these widespread implementation problems, the Houston experiment appears to be working. According to a preliminary study by the University of Memphis,[5] SFA's median first-year results varied from ES=+.15 to +.33 (*see footnote 2*) in Houston, largely depending on whether all of the program's features had been faithfully implemented. Although lower than the achievement gains reported in previous studies of smaller-scale implementations, these results still demonstrate a statistically significant improvement.

Considerations

Although the research on Success for All is overwhelming in proving its effectiveness, any successful implementation will require a substantial commitment in funding, staff time, and school restructuring work. Because this program was developed for, and is primarily used by, high-poverty Title 1 schools, some have the idea that the program is primarily remedial (interpreted to mean "dumbed down"). The truth, however, is that SFA's developers went out of their way to strike a workable balance between challenging content and the acquisition of basic skills, incorporating everything from guided skill instruction to basals to children's classics such as *Charlotte's Web*. As such, it should be considered by any elementary school, across the demographic

range, that needs to boost reading scores and student achievement levels.

Although the costs of implementation are high, the reallocation of existing Title I funds and the redeployment of existing staff can make it affordable, even in high-poverty schools and districts. For example, a school that already has four Title I teachers could train one to be the SFA facilitator, while the other three become reading teachers/tutors.

Another tradeoff arises from Success for All's intensive focus on reading in the primary grades. This could result in less money for other programs and activities, and more resources allocated for grades 1-3 versus grades 4-6. But while some of these trade-offs may be difficult, research and common sense tell us that the best, most cost-effective academic intervention program is one that prevents students from falling behind in the first place. For long-term success, it is critical that young students be provided with a firm academic foundation. The ability to read with ease and comprehension is the bedrock upon which that foundation is built. This program has proven it can help schools accomplish this goal.

Publications/Resources

Robert E. Slavin, Nancy A. Madden, Lawrence, J. Dolan and Barbara A. Wasik. *Every Child, Every School: Success for All* (1996). Thousand Oaks: Corwin Press, Inc. 805/499-9774.

Robert E. Slavin, et al. "Whenever and Wherever We Choose: The Replication of Success for All," *Phi Delta Kappan* (April 1994).

Robert E. Slavin, et al. "Preventing Early School Failure: What Works," *Educational Leadership*, (December 1992/January 1993).

For more information, contact: Center for Research on the Education of Students Placed at Risk, Johns Hopkins University, 3505 North Charles Street, Baltimore, Maryland 21218. **Phone:** 800/548-4998. **Fax:** 410/516-8890. **Internet:** http://successforall.com

[1] Per-pupil costs may be lower in multischool implementations.

[2] An effect size is a standard means of expressing achievement gains and losses across studies, showing differences between experimental and control groups in terms of standard deviation. An effect size of +1.00 indicates that the experimental group outperformed the control group by one full standard deviation. To give a sense of scale, this would be equivalent to an increase of 100 points on the SAT scale, two stanines, 21 NCEs (normal curve equivalent ranks) or 15 points of IQ (Fashola and Slavin, 1996)—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (in range with mainstream America). Because of differences among study designs and assessments, this can only be considered a "rough" measure of comparison. In general, an effect size of +.25 or more is considered to be educationally significant.

[3] Slavin, Madden, Dolan, Wasik, Ross, and Smith, 1994; Slavin, Madden, Karweit, Liverman, and Dolan, 1990. Note: Reading results data are pooled scores from all interventions, 1988-1993, with scores rising through each successive year of implementation.

[4] **Roots and Wings**, a program to supplement the Success for All reading and language arts curriculum with curricula in math, social studies, and science for grades K-6, has also been developed through New American Schools Designs. Preliminary results are promising.

[5] Nunnery, Ross, and Smith, 1996.

High Schools that Work (HSTW)

Grades Covered	High school/9-12.
Curriculum Materials	Limited pilot studies of new student curricula are being conducted.
Instructional Support/ Professional Development	HSTW schools are invited to participate in the program's annual professional development conference. Schools also receive a set of staff development guides on subjects ranging from assessment to site-based management, publications on successful practices, and a newsletter. A video series to support implementation of the program's "key practices" also is available; and schools can participate in an annual video teleconference on key implementation issues, for which study guides are distributed.
School Reform/ Restructuring Assistance	The program provides a framework, technical assistance, and a support network to help schools make the necessary changes in curricula, scheduling, resource allocation, and professional development. Support for systemic reform is offered at the state and district level through formal working relationships with education officials. Feedback from test, survey, and site-visit data, gathered in conjunction with the HSTW evaluation process, are made available to schools; as are recommendations for improvement. Assistance in identifying new funding sources also is provided.
Role of Paraprofessionals	Use of paraprofessionals is determined at the school level.
Cost of Implementation	Although HSTW funding varies greatly from state to state and school to school, the program recommends that $15,000-$20,000 in discretionary funding be devoted to implementation. Priority expenditures are for staff development, common planning time, and extra help for struggling students. Depending on the career focus, extra funds may be needed for new materials, equipment, technology, laboratories, etc.
Preliminary Results	In addition to other assessments, HSTW schools use a battery of tests drawn from the National Assessment of Educational Progress (NAEP). In 1993, 96 schools participated, resulting in a mean reading score of 267.1, a mean math score of 284.8, and a mean science score of 269.5. By 1996, scores had risen to 272.9 in reading, 285.3 in math, and 283.3 in science—significantly higher than NAEP national mean scores for vocational students of 266.6, 276.7 and 266.7 respectively.[1] Schools which faithfully implement all of the program components showed the most dramatic gains, with scores approaching those achieved by the nation's college-bound students.[2]

High Schools that Work (HSTW), a project of the Southern Regional Education Board, was designed to help states raise the academic achievement levels of career-bound students.[3] As such, it historically has worked with and through state education departments, with an emphasis on connecting the school house, district office, and state in a long-term collaborative effort. An HSTW coordinator, employed by the state, is trained to facilitate and oversee most aspects of the program, including implementation support and technical assistance site visits, which are conducted at least

every three years.

The main goal of the program is to help participating schools replace their general and vocational tracks with an academic core of high-level math, science, and English courses, integrated with quality vocational studies, thus helping to raise achievement and broaden students' educational and career opportunities. The program, begun in 1987, is now being used in more than 650 schools in 21 states.

Main Features

Working with state education departments, school systems, and school staff, HSTW attempts to help schools implement 10 "key practices" for accelerating student achievement:

High Expectations—Establish high expectations and standards for general and vocational education students, which are clear and understood by all stakeholders—including students, parents, school staff, and the business community.

Vocational Studies—Increase access to intellectually challenging vocational and technical courses, with a major emphasis on preparation for continuing education and on developing the high-level mathematics, science, language arts, and problem-solving competencies necessary to function well in today's workplace.

Academic Studies—Increase access to core academic courses from the college-preparatory curriculum, using functional and applied strategies that enable students to see the relationship between course content and future employment opportunities.

Program of Study—Increase graduation requirements for general and vocational track students to include four years of college-preparatory English, three years each of math and science (with at least two years in each subject area of equivalent content to courses offered in the college-prep program), and a major concentration composed of at least four Carnegie units in a broad technical or academic course of study and at least two Carnegie units in related technical or academic courses.

Work-Based Learning—Provide students with a structured system of work-based and high-status school-based learning—high school and postsecondary—collaboratively planned by educators, employers, and workers, and resulting in an industry-recognized credential and employment opportunities in a career pathway.

Common Planning—Provide the organizational structure, staff development, and time that allow academic and vocational teachers to work together in planning and providing integrated instruction in high-status academic and technical content.

Student Engagement—Tailor instructional practices to foster more active engagement in learning on the part of students.

Guidance—Involve each student and his or her parent(s) in a career guidance and individual counseling system that can help students focus on completing an accelerated program of study with a career or academic major.

Extra Help—Establish a structured system to provide the extra assistance and support that can help career-bound students successfully complete an accelerated program of study that includes challenging academic content and a major.

Keeping Score—Use student assessment and program evaluation data to continuously improve curriculum, instruction, school climate, organization, and management—with the goal of raising student achievement.

Results

With permission from the NAEP Governing Board, HSTW administers a battery of tests to students in reading, mathematics, and science, which are drawn from and normed against NAEP assessments. This has allowed the program to gauge schools' progress longitudinally as well as in reference to national norms. Test results (gathered in 1990, 1993, 1994, and 1996) show both substantive overall gains and large variances among school sites. Mean scores for all 514 sites participating in the 1996 assessments show that HSTW students significantly outperform vocational education students nationally: *HSTW* 272.6 (reading), 285.2 (math), 282.6 (science); *national* 266.6 (reading), 276.7 (math), and 266.7 (science).[4] The assessments also show that the key variable among the highest- and lowest-performing HSTW schools is not pre-program scores or number of years in the program, but the extent to which schools have actually imple-

mented the program's "key practices."

Concurrent with the NAEP assessments (now on a two-year schedule), the program has also commissioned independent student, teacher, and administrator surveys for each school, as well as transcript analyses comparing the actual level of course offerings against program goals. On the off-years (beginning in 1997), studies of the educational and career status of first-year graduates will also be conducted.

Case Studies

St. Mary's County Technical Center (St. Mary's County, Maryland). In 1988, St. Mary's County Technical Center adopted the HSTW program. An underutilized vocational education facility, held in low regard by the local business community, the high school had become a dumping ground for the county's discipline problems. In addition to the large number of students who lacked basic literacy skills, 34 percent of students were discipline referrals and 34 percent were classified as "special education." In accordance with HSTW, the school's curriculum was revamped. The general track was eliminated, and academic requirements were strengthened. The vocational program was also beefed up, with the incorporation of applied learning courses and the expectation that all students were being prepared for postsecondary training. Interim results are positive. In 1990-91, senior SAT scores averaged 869. By 1994-95, with a similar student population and 50 percent more students taking the test, SAT scores had jumped 70 points to an average of 939. During those years, the dropout rate also fell from 7.2 percent to 3.6 percent, enrollment went up, and discipline problems were cut by half.

Sussex Technical High School (Georgetown, Delaware). Sussex Technical High School, located in rural southern Delaware, opened in 1961 to serve part-time students from seven independent "feeder" districts. By the mid-1980s, serious problems were evident. Enrollment, test scores, and student expectations were all low and getting lower. In 1991, Sussex Tech opened as a redesigned HSTW school. The general track was eliminated, graduation requirements were raised, and challenging academic and vocational courses were introduced. The lowest-scoring school to participate in HSTW's 1990 assessments, by 1996 Sussex had managed to take a similar group of students and raise the school's score to above the HSTW mean for all subjects tested (reading, math, and science). In 1994, only 8 percent of students took the SAT, with a combined average score of 790. In 1996, 28 percent of students chose to take the test, with a combined average score of 876.

Considerations

While the research on this program is still preliminary, it is clear that a large number of schools have been helped to make the kinds of substantive reforms which lead to higher student achievement. A significant percentage, however, have yet to show meaningful improvement. According to data collected by the program in 1996, one-third of career-bound students at participating sites were still enrolled in watered-down academic courses. Half were enrolled in vocational courses that lacked challenging assignments and projects.

HSTW has responded to these implementation problems by beefing-up technical assistance services to school sites. One important problem has yet to be addressed, however. Understanding that systemic reform is crucial to long-term success, thus far, only schools from partnership states have been allowed formal participation in the program.[5] As a part of the implementation process, state education officials are asked to assume much of the responsibility for program dissemination, oversight, and monitoring, while district and school administrators are asked to commit to the program and its "key practices." Yet there appears to be little if any direct contact with the majority of school staff until they are being trained to implement the program. In other words, the program depends on competence and support at multiple bureaucratic levels, while having no formal mechanism to ensure staff "buy-in" at individual school sites. Thus, some schools have embraced the program as a ray of hope, while others may regard it as yet another in a long line of futile, top-down "reform" schemes. In discussions, HSTW officials have expressed interest in opening up the program to reform-minded school districts in non-partnership states. The program has also begun to organize an urban network to help provide support to dis-

tricts with multiple HSTW sites. Whether formal participation by individual schools will be allowed—no matter how committed and supportive staff members may be—is still far from certain.

Despite glitches, HSTW has many obvious strengths: It is designed to help students achieve to high standards. It gives proper focus to—and helps provide—high-quality professional development. It stresses the need for a structured support system for struggling students. It helps to define, upgrade, and mesh essential academic and vocational skills. It provides a system of student assessment, data-collection, and feedback that can help spur continuous improvement. It offers assistance in obtaining business and community support. And it provides a post-implementation support network for all participating schools.

Given these benefits, local unions and interested technical and vocational schools outside of the 21 partner states may want to consider approaching state and/or district administrators about official adoption of the program. To help support successful replications, local initiatives to ensure that staff members at each participating school are fully informed, supportive, and involved—prior to implementation—should also be considered.

Publications/Resources

Gene Bottoms, Alice Presson, and Mary Johnson. *Making High Schools Work Through Integration of Academic and Vocational Education* (1992). Atlanta: Southern Regional Education Board.

Gene Bottoms and Deede Sharpe. *Teaching for Understanding through Integration of Academic and Technical Education* (1996). Atlanta: Southern Regional Education Board.

Reaching the Next Step: How School to Career Can Help Students Reach High Academic Standards and Prepare for Good Jobs (1997). American Federation of Teachers.

For more information, contact: High Schools that Work, Southern Regional Education Board, 592 Tenth Street, NW, Atlanta, GA 30318. **Phone:** 404/875-9211. **Fax:** 404/872-1477. **Internet:** http://sreb.org/programs/hstw/high.html

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[1] Differences in achievement are statistically significant at the 1.3 level for reading, the 1.6 level for mathematics, and the 1.5 level for science.

[2] The most recent national NAEP scores for college-bound students are 302.4 for reading (1992), 316.8 for mathematics (1992) and 306.8 for science (1990).

[3] In this context, "career-bound students" are defined as those who, upon entering high school, do not intend to prepare for admission to a four-year college.

[4] See footnote 1.

[5] As of 1997, the 21 official partnership states were: Alabama, Arkansas, Delaware, Florida, Georgia, Hawaii, Indiana, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Mississippi, North Carolina, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

Direct Instruction (DI)

Grades Covered	Primarily an elementary school (pre-K-6) program, but also used successfully with secondary and adult special education and remedial students.
Curriculum Materials	Curricular materials, daily lessons, and teachers' guides are available for grades K-6 in reading, language arts, spelling, and math; grades 4-6 in expressive writing; grades 3-6 in science; grades 3-12 in corrective reading; and grades 4-12 in corrective math.[1]
Instructional Support/ Professional Development	This is a commercially published program; materials may be purchased by individual grade and subject, as well as in a package suitable for schoolwide implementations. Professional development and implementation support of differing levels of quality can be contracted from various providers for both single-subject and schoolwide implementations. At times, the program's scripted teachers' guides have been used in lieu of—rather than in addition to—adequate professional development, giving rise to criticism of the program for being "teacher proof."
School Reform/ Restructuring Assistance	Limited assistance can be contracted from some providers as part of their implementation-support package.
Role of Paraprofessionals	Trained classroom paraprofessionals are fully integrated into the program, working as instructional aides, one-on-one tutors, and small-group leaders under the direction of certified teachers.
Cost of Implementation	For a schoolwide first-year implementation of the K-5 reading, writing, language, and math curriculum, the estimated costs are $150-$200 per student, including materials, training of staff, and a part-time school facilitator/curriculum coach.[2] A first-year implementation of a stand-alone reading/language arts program ("Reading Mastery") is estimated at $65-$100 per student, professional development not included.
Results*/Effect Size[3]	Language (+.49 to +.84); reading comprehension (+.07 to +.69); math (+.57 to +1.11).[4] ** To give a sense of scale, an effect size of +1.00 would be equivalent to an increase of 100 points on the SAT scale or 15 points of IQ—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (the norm for mainstream students).*

Direct Instruction (DI) is a highly-structured instructional approach, designed to accelerate the learning of at-risk students. Curriculum materials and instructional sequences attempt to move students to mastery at the fastest possible pace. The oldest version of the program, Distar, was developed in the 1960s as part of Project Follow Through, a massive educational initiative of President Johnson's War on Poverty. Despite its success in raising student achievement levels, Distar was heavily criticized for being too rigid; concentrating too heavily on the basics; and for some vendors' poor implementation practices, such as selling it without support as a "teacher-proof" program. As DI, the original Distar program has been expanded and enriched. Although the early mastery of basic skills is still a key element, the program also addresses students' general comprehension and analytic skills. While DI has been used successfully as a schoolwide program, the reading and language arts

(and sometimes math) portions of the program are more frequently purchased for separate implementations. Either way, adequate professional development, ensuring that practitioners understand what the program is and how it works, is essential for successful implementation.

Main Features

Scripted Lesson Plans—Classroom scripts are a hallmark of Direct Instruction; the scripts are written, tested, rewritten, retested—polished in a cycle of classroom field-testing and revision that ends only when trials show that 90 percent of students grasp a lesson the first time around. Without proper orientation, many teachers find this level of prescriptiveness off-putting. The idea, however, is to ensure that even beginning teachers will be successful and to allow veteran educators to fill any holes in their teaching skills. With curricular and pedagogical details presented in precise relationship to each other, the program offers a template of how to teach particular skills and content. It is a template that can be applied to other curricula or modified to better suit the needs of a particular group of students, but only after the teaching methods have been learned to precision.

Research-tested Curriculum—In DI, skills are taught in sequence until students have fully internalized them (what cognitive researchers call "automaticity") and are able to generalize their learning in new, untaught situations. Each lesson sequence is extensively field-tested to determine the most effective and efficient way to lead students to mastery. For example, the first reading and language arts lessons focus on phonemic awareness, which are followed by increasingly complex phonics and decoding lessons, which are followed by lessons that focus on comprehension and analysis of content, etc. With each lesson building on previously mastered skills and understandings, teachers are able to dramatically accelerate the pace of learning, even for the most disadvantaged students. New material is usually introduced through teacher presentations to the whole class or small groups, followed by guided practice and frequent checks for individual student mastery. Once the skill has been learned to the point of automaticity, cognitive studies show that it is transfered from short-term to long-term memory, thus freeing children to apply their learning, attend to content, and move on to progressively more difficult and higher-order skills. Some have criticized the curriculum, particularly reading and language arts in the later grades, for not containing a broad or challenging enough selection of children's literature. The program is easily supplemented, however, especially after students have been helped to master basic decoding skills.

Coaches/Facilitators—Another feature of the program is the use of in-class coaches for implementation support. The coach periodically monitors each classroom and is available to assist individual teachers with any problems, perhaps taking over a part of the lesson to model pedagogical procedures. In some cases, this role has been filled by an employee of the contractor, retained to help with implementation. In some multi-school implementations within a single district, teachers are released from regular classroom duty, given special training, and assigned to assist one or two schools.

Rapid Pace—Because the goal of DI is to move students to mastery as quickly as possible, a large proportion of classroom time is spent on fast-paced teacher-directed instruction, punctuated by rhythmic choral-group and individual-student responses. For instructors, this means a very full work day. For example, the DI program requires teachers to ask 300 or more questions in six small-group sessions each day and to perform reading checks every five or 10 lessons to ensure that all students reach 100 percent mastery. This level of interaction, which produces substantial achievement gains, is made possible by the use of the heavily researched, highly refined scripts.

Achievement Grouping—Common periods for reading and math are established across grades during which students are regrouped by performance level, with the idea that all students will progress at the fastest possible pace and no students will be left behind. In several schools, these groups are reduced in size by assigning half of the class to a paraprofessional who leads the group through guided practice for half of the period, while the teacher introduces new material to the rest of the class, and then changing places. If the program is implemented well, these should not be rigid "tracks," but flexible

achievement groups, with students who are progressing quickly periodically reassigned to a faster group and immediate assistance given to students who are struggling.

Frequent Assessments—Frequent assessments are also built into the program as a means to ensure that all students are reaching mastery, to detect any student who might need extra help before falling too far behind, and to identify students who need to be re-grouped.

Results

When this program is faithfully implemented, the results are stunning, with some high-poverty schools reporting average test scores at or above grade level—in a few cases, several grades above. In the 1977 evaluation of Project Follow Through, the achievement results of high-poverty Direct Instruction students were compared to students in nine other early education programs. DI students outperformed control group students and students in the other experimental programs on every academic measure, moving from the 20th percentile (the normal level of performance for children in poverty) to about the 50th percentile (even with mainstream students). In contrast, the achievement results of students in some of the other programs actually *declined* as a result of the intervention. Follow-up studies of students taught by Direct Instruction in the early grades also show enduring benefits. One New York comparison found that more than 63 percent of DI students graduated from college, as opposed to 38 percent of the control group; mean ninth-grade test scores were higher (ES=+.41, reading; ES=+.29, math; *see footnote 3*); retention rates were lower (21 percent vs. 33 percent); and there were fewer dropouts (28 percent vs. 46 percent).

Case Studies

Wesley Elementary School (Houston, Texas). Wesley Elementary has one of the longest, continuous Direct Instruction implementations in the country. It is located in one of Houston's poorest, mostly African-American, neighborhoods and has a student population that is over 99 percent minority and 90 percent eligible for school lunch subsidies—statistics that usually signal low achievement levels. For many years, however, this school has ranked in the top tier of all schools in the state. Much of this success has been credited to the school's 1975 adoption of Direct Instruction. First piloted in a Title I reading resource room, DI was soon in use throughout the school. By 1980, Wesley students had average test scores above the 80th percentile in both reading and vocabulary, outscoring students in comparison schools by more than 40 percentile points. In many of the succeeding years, Wesley's scores have been even higher, with some classes testing up to three years above grade level.

Utah ASAP Project. As a part of Utah's Accelerated Student Achievement Project (ASAP) to improve poor-performing Title I schools, three elementary schools adopted schoolwide DI programs during the 1994-95 school year. The preliminary achievement data are impressive, with students in all three DI schools outperforming more advantaged control school students in two Woodcock-Johnson subtests. After two years in the program, one school moved from last to second place (out of 24 schools) in the district's annual Math Olympics.

Considerations

This is a highly interactive, teacher-intensive approach to education. Teachers and paraprofessionals must be informed about—and prepared for—its fast pace and the structured, repetitive nature of the program.

DI also has a history of problematic implementations. When the program's developer, former preschool teacher Siegfried Engelmann, started designing the curriculum more than 25 years ago, he included fully scripted teachers' guides, believing that they could serve as prototype demonstrations for specific teaching skills. In other words, one design objective was to provide hands-on teacher training *during* class-time, thus reducing start-up costs and at the same time ensuring that all teachers would have the skills necessary to reach the maximum achievement levels. Unfortunately, some marketers and administrators interpreted this to mean that *no* training was necessary, and that teaching skill was inconsequential to the success of the program. DI materials were sold as "teacher proof,"

leaving administrators who didn't understand the program to impose it in a rigid, dictatorial manner. Educator horror stories and lower-than-expected achievement levels were the predictable results. In some regions, this has left DI with a tarnished reputation that will have to be clarified and overcome. For any new implementation to be successful, proper orientation and training are vital—not only for teachers and paraprofessionals but also for administrators.

Another frequent criticism is that DI provides so much structure and regimentation that it stifles student and teacher creativity. The student results—both in higher academic achievement levels and elevated measures of self-esteem—should speak for themselves. Teacher focus groups, following DI implementation in Broward County, Florida, are also instructive. Some teachers felt that the "standardized approach actually allowed more creativity, because a framework was in place within which to innovate," and said that they could do more with content once DI had helped students acquire the necessary skills. Other teachers reported that they had initially been resistant, feeling that "even though the students thrived on it, the repetition was boring for the faculty," but, over time, had found ways "to innovate within the repetition, so that they become drawn in as well."[5]

The Broward implementation also incorporated another important feature: advanced training for and assignment of teaching staff to act as full-time "coaches" (facilitators) for the new DI schools. By retaining their status within the bargaining unit, it was made clear that these educators were a resource for the benefit of the teaching staff, not administrators. There was always someone to turn to, on a confidential basis, for advice and assistance. Given the inevitable frustrations, glitches, and misunderstandings that arise when implementing any new curriculum, using new instructional methods, this assistance has proven invaluable.

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For more information, contact: Direct Instruction Project, University of Oregon, College of Education, 170 Education, Eugene, Oregon 98195, *or* Association for Direct Instruction, P.O. Box 10252, Eugene, Oregon 98195. **Phone:** 800/995-2464. **E-mail:** ADIhome@aol.com **Internet:** http://darkwing.uoregon.edu/~adiep/.

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[1] These materials are available from the SRA division of Macmillan/McGraw-Hill, 800/843-8855. In addition, several videodisc programs on math, geometry, chemistry, and earth science are available from BFA Educational Media, 800/221-1274.

[2] These costs are based on the budget for the Alliance of Quality Schools in Broward County, Florida, an effort to raise achievement levels of low-performing schools by implementing a DI reading and math curriculum. Estimated per-school costs were as follows: Direct Instruction materials, $35,000; professional development (five days before school and five days during school), $70,000; a trained teacher, assigned to act as a part-time coach/curriculum consultant for the school, $35,600.

[3] An effect size is a standard means of expressing achievement gains and losses across studies, showing differences between experimental and control groups in terms of standard deviation. An effect size of +1.00 indicates that the experimental group outperformed the control group by one full standard deviation. To give a sense of scale, this would be equivalent to an increase of 100 points on the SAT scale, two stanines, 21 NCEs (normal curve equivalent ranks) or 15 points of IQ (Fashola and Slavin, 1996)—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (in range with mainstream America). Because of differences among study designs and assessments, this can only be considered a "rough" measure of comparison. In general, an effect size of +.25 or more is considered to be educationally significant.

[4] Data from Abt Associates' 1977 evaluation of Project Follow Through and a 1996 meta-analysis of this and more recent studies. See *Research on Direct Instruction: 25 Years beyond Distar*, by Gary L. Adams and Siegfried Engelmann.

[5] "Alliance of Quality Schools Evaluation Report" (August 1996). School Board of Broward County, Florida.

Core Knowledge (CK)

Grades Covered	Elementary and Middle School/pre-K-8.
Curriculum Materials	Separate Core Knowledge Sequences—content guidelines—are available for *Preschool*, *Grades K-6* and *Grades 7-8*, detailing what is to be taught in the areas of language arts, American and world civilizations, geography, visual arts, music, math and science. A series of resource books, *What Your Kindergartner(-6th Grader) Needs to Know*, are also available from the Core Knowledge Foundation, as are lesson plans prepared by Core Knowledge teachers around the country, which are assembled and disseminated as "Share the Knowledge" materials.
Instructional Support/ Professional Development	Inservice presentations and professional development workshops can be contracted through the Foundation. It also distributes "model" planning guides and holds an annual conference with a focus on professional development, which brings together more than 1,200 teachers and administrators from around the country.
School Reform/ Restructuring Assistance	Limited assistance can be contracted through the Foundation.
Role of Paraprofessionals	To a large extent, the deployment of classroom paraprofessionals is determined at the school level. CK recommends their use as one-on-one skill-and-content tutors for new and/or struggling students, assistants in researching and developing age-appropriate materials and resources, and sources of assistance for students in completing CK schools' many curriculum-related projects and activities.
Cost of Implementation	Variable. The costs for the curriculum sequence (less than $25/teacher) and workshop training are modest. However, the costs of supplementary curricular materials, professional development, and the faculty release time necessary for properly implementing the program can make it more expensive. One study estimates start-up costs ranging up to $26,000 per school.[1]
Preliminary Results	Preliminary results are encouraging, and a large-scale longitudinal study is currently under way.[2] *(See "Results" section, below, for a description of positive results from individual school studies.)*

The Core Knowledge Sequence (CK) was designed to add content to the general skills and objectives typically found in state and local curriculum guides and provide a common core of knowledge in the early grades. Originated by University of Virginia professor E.D. Hirsch, Jr., CK is being implemented in over 350 schools in 40 states around the country. As such, it represents the first articulation of many standards-based reformers' push for a model national curriculum, built around the idea that American schools need challenging academic standards to provide equal educational opportunity. Or, as one teacher describes Core Knowledge, "It's like a gifted curriculum for all kids." Designed to comprise about 50 percent of the school's curriculum, the sequence provides a detailed listing of specific content to be taught, at each grade level, in the disciplines of history, geogra-

phy, mathematics, science, language arts, and fine arts.

Main Features

Interesting, Detailed Curricular Content—One measure of the success of the standards movement is that virtually every state in the nation is in the process of developing or strengthening its academic standards. Districts, in turn, are attempting to translate these state mandates into curriculum guides. Unfortunately, a majority of these state and district documents are still not clear enough to be useful at the classroom level. Many focus on the skills students are to acquire rather than on the specific content of the curriculum to be delivered. Core Knowledge seeks to fill this hole by outlining the grade-by-grade knowledge that children will be taught. For example, the first-grade history sequence asks schools to: "Introduce [students to] ancient civilizations and the variety of religions in the world, using maps of the ancient world," specifically: *Egypt* (King Tutankhamen, Nile, Pyramids, Mummies, Animal Gods, Hieroglyphics); *Babylonia* (Tigres and Euphrates, Hammurabi); *Judaism* (Moses, Passover, Chanukah); *Christianity* (Jesus); *Arabia* (Mohammed, Allah, Islam); *India* (Indus River, Brahma, Hinduism, Buddha); *China* (Yellow River, Confucius, Chinese New Year).

Sequenced Presentation—Cognitive research indicates that children learn new skills and knowledge by building on what they already know. Core Knowledge's developer, E.D. Hirsch, Jr., observed that this can place some American students at a perpetual disadvantage. Children from highly educated families are exposed to a rich vocabulary and knowledge base in their formative years, enabling them to acquire additional skills and knowledge at a faster pace than their less advantaged peers. The result is an achievement gap that increases through successive years of schooling. The Core Knowledge response is to expose all students, very early, to interesting and demanding subject matter, and then to build on that knowledge, year by year, in a carefully constructed sequence. Because what is to be learned is defined clearly, teachers are better able to provide students with consistent, coordinated instruction. It is also easier to monitor whether students have mastered what they need to know for the grade level and to intervene quickly when students need extra help.

A Common Core—Because the program stipulates exactly what is to be taught grade by grade, students advance through school on a more equal footing. All students, regardless of background or neighborhood, are exposed to a common core of learning, and the watered-down curriculum typical of many high-poverty schools is eliminated. Core Knowledge teachers also have the advantage of knowing exactly what their students have and have not learned the year before. Unlike most U.S. teachers, CK teachers don't have to waste time reteaching previously covered material or developing different lesson plans to accommodate students who already know the material or those who are far behind. Because all teachers in a specific grade level are covering the same material, they are able to work collaboratively, sharing ideas, resources and lesson plans, or even to divide up the work of developing a new unit.

Results

Although no large-scale quantitative data are yet available for this program, several studies show impressive results at particular Core Knowledge sites.

For example, recent test results from the Paul H. Cale Elementary School in Albermarle County, Virginia, indicate that the program may raise overall student scores and lower the achievement gap between advantaged and disadvantaged students. Cale is the second-highest poverty elementary school in the district, with approximately 40 percent of students qualifying for free- or reduced-price lunches. A districtwide review of 1996 scores on the Iowa Test of Basic Skills showed that the socioeconomic status of students was an extremely accurate predictor of schools' performance rankings—the higher the concentration of poor students, the lower the percentage who scored above the 50th national percentile. Only one school stood out from this trend: Cale, with almost 70 percent of students scoring above the national norm, had an achievement level that was far above prediction. According to the school's principal, "scores have consistently

gone up" over the four years the school has been using Core Knowledge, "especially in social studies, science, and math.... We are scoring well above the national norms in social studies, above the 75th percentile.... Our scores defy what you would expect."[3]

Another recent study demonstrated that students at the Nathaniel Hawthorne Elementary School in San Antonio, Texas, also achieved at higher than expected levels. Hawthorne—an inner-city neighborhood school with a predominantly Hispanic student population, 96 percent of whom qualify for free or reduced price lunches and 28 percent of whom are limited-English proficient (LEP)—adopted the Core Knowledge curriculum during the 1992-93 school year. According to the author of the Hawthorne study, "although Hawthorne students tend to be more at risk of failing academically than are students in the district as a whole, because of the larger percentages of economically disadvantaged and LEP students, snapshots indicate that the school has succeeded in raising achievement levels beyond the aggregate performance of all other elementary schools in the district." For example, Hawthorne students' performance on the reading portion of the 1994 Texas Assessment of Academic Skills was compared to students in the other 65 elementary schools in San Antonio. "Although district reading performance is generally consistent across grade levels with a student pass rate of about 55 percent, Hawthorne's results show a steep increase in the reading pass rate at consecutive grade levels. At Grade 3, Hawthorne's pass rate of 34 percent is well below that of the district. By Grade 5, however, Hawthorne's 67 percent pass rate far exceeds the district's 56 percent pass rate.[4]

Case Studies

Although Core Knowledge offers a challenging and comprehensive grade-by-grade curriculum sequence, its implementation support—important for successful replications in low-performing schools—is not as strong as that offered by some other research-based reform models *(see "Considerations" section, below)*. Therefore, we offer descriptions of two promising implementation models:

The Trinity Partnership—In San Antonio, Texas, Trinity University has established an extensive support system for the implementation of Core Knowledge. As an outgrowth of a pre-existing university-public school partnership, Trinity assisted the city's first Core Knowledge school, Nathaniel Hawthorne (see above), with the implementation of the curriculum. Over the intervening years, as approximately 20 area schools attempted to replicate the program, the university created a network to support the new implementations. Support has come in a variety of forms, such as: coordinating an active network of Core Knowledge schools; offering technical and financial support, including stipends to teachers who participate in network-related activities that extend beyond normal working hours or assigned responsibilities; helping to arrange and facilitate common planning time for grade-level and subject-area teachers; supporting and designing professional development opportunities, including pre- and inservice pedagogical and content-area training; providing access to curricular material and resources, including the creation of a Core Knowledge Technology Center; and supporting "mentorship" and train-the-trainer programs specifically designed to help with the introduction of the program at new sites.

Calvert County, Maryland—Calvert County is the first U.S. school district to implement Core Knowledge in all elementary schools. Much of the impetus for the systemwide adoption came from parents and teachers, responding to information about Core Knowledge pilot programs that had begun in three schools. According to administrators, teacher support ("buy-in") was one of the keys to the program's successful implementation, with the only resistance coming from principals. Today, all 12 Calvert County elementary schools are using the curriculum. Because of the systemwide implementation, Core Knowledge schools in the district seem to have some clear advantages. Economies of scale are achieved by having inservice training delivered for larger groups of teachers; implementation support can be delivered by a small team of central-office "teacher-specialists"; teacher networking and the sharing of experience and information across schools is made possible at the local level; scope and sequence statements, aligned assessments, and other supporting documents are prepared by experts, with teacher input; and the central office, not individual

schools or teachers, does the work of aligning the curriculum to state standards. In addition, teachers know exactly what background knowledge to expect from students who transfer from one county school to another.

Considerations

The Core Knowledge Sequence represents the first major effort to specify a common core curriculum for all American students. As such, it goes a long way toward addressing the low expectations for student performance and lack of challenging curricula that characterize many of the nation's low-performing schools. Although implementation assistance can be purchased through the Foundation, it is not as extensive as that offered by school-improvement programs specifically designed to help low-performing schools. While many of these elements currently are being strengthened, CK still lacks: extensive-enough professional development assistance; the school restructuring assistance needed to ensure that teachers share common planning time; readily-available high-quality curricular and other age-appropriate resource materials; and aligned performance standards and assessments. The program requires a lot of staff work during start-up, including extra time spent on researching, planning and writing new lessons. It should also be noted that CK was not designed to strengthen the teaching of basic skills, such as phonics—a priority need for many low-performing schools.

Nevertheless, several schools and school systems—including high-poverty urban schools—have found ways to fill these gaps on their own. Therefore, before deciding whether or not to adopt the program, it is worthwhile for schools to learn how these successful implementations have been supported. The preliminary findings of a three-year quantitative and qualitative longitudinal study of Core Knowledge offer some useful clues.[1] According to the researchers, several factors "greatly facilitated successful early implementations": (1) extra funding for start-up, including teacher preparation, materials, etc., (2) common planning time for teachers, (3) parental and community support, (4) site-based management, which can lead to increased flexibility in the use of resources, etc., (5) district support, (6) interest and support from staff, (7) team teaching, which allows the burden of extra work to be shared, (8) sharing lessons and experience with teachers at other Core Knowledge schools, (9) assistance in finding materials, and (10) local adaptations that help serve schools' specific needs.

At the same time, researchers also detailed the benefits of Core Knowledge: (1) children gain self-confidence as they gain knowledge, (2) students connect to previously learned material, (3) students are more interested in learning and reading, (4) discipline problems decrease, (5) Core Knowledge meets the needs of all students, (6) interaction and accountability among teachers are increased, (7) teachers find their work more interesting and rewarding, and (8) parents are satisfied. The list speaks for itself.

Publications/Resources

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For more information, contact: Core Knowledge Foundation, 2012-B Morton Drive, Charlottesville, VA 22901. **Phone:** 800/238-3233. **Fax:** 804/977-0021. **E-mail:** coreknow@www.comet.net **Internet:** http://www.coreknowledge.org

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[1] Stringfield, Datnow, Nunnery, and Ross, "First Year Evaluation of the Implementation of the Core Knowledge Sequence: Qualitative Report" (1996).

[2] Among the other studies now under way is a three-year multistate comparison of schools being conducted by researchers from Johns Hopkins University's Center for the Social Organization of Schools and the University of Memphis *(see footnote 1)*.

[3] Michael Marshall, "Core Knowledge Sequence Credited in Test Score Boosts," *Common Knowledge* (Fall 1996), newsletter of the Core Knowledge Foundation.

[4] Gail Owen Schubnell, "Hawthorne Elementary School: The Evaluator's Perspective," *Journal of Education for Students Placed at Risk* (1996), Vol. 1, No. 1.

[5] See footnote 1.

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* These are issue titles. Requests for these issues and/or copies of articles can be sent to: *American Educator*, AFT, 555 New Jersey Avenue, NW, Washington, DC 20001, or E-mail: AMEDUCATOR@aol.com

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Note on Program Selection Methods

The purpose of this series of program profiles is to provide background information about research-based programs that, when properly implemented, show promise for raising student achievement significantly. For this effort, we solicited program recommendations from experts in the field and reviewed the published records of the National Diffusion Network, materials found through the library of the Office of Educational Research and Improvement, and recent research reviews. We then attempted to obtain descriptive information and copies of all published evaluations—including study designs, field test data, and replication histories—from the developers of all programs, thus identified.

All available materials were then reviewed against the following criteria:

- When properly implemented, the program helps students acquire the skills and/or knowledge they need to successfully perform to high academic standards.
- The program has been effective in raising academic achievement levels, especially for "at risk" students, based on *independent* evaluations.
- The program has been effectively implemented in multiple sites beyond the original pilot school(s).
- Professional development, materials and ongoing implementation support are available for the program, either through the program's developer, independent contractors, or dissemination networks established by schools already in the program.

The standards by which program effectiveness was gauged are as follow:

- Evaluations demonstrate that the program can help produce educationally significant student achievement gains, as measured in effect sizes. An effect size is a standard means of expressing achievement gains and losses across studies, showing differences between experimental and control groups in terms of standard deviation. An effect size of +1.00 indicates that the experimental group outperformed the control group by one full standard deviation. To give a sense of scale, this would be equivalent to an increase of 100 points on the SAT scale, two stanines, 21 NCEs (normal curve equivalent ranks) or 15 points of IQ (Fashola and Slavin, 1996)—enough to move a student from the 20th percentile (the normal level of performance for children in poverty) to above the 50th percentile (in range with mainstream America). Because of differences among study designs and assessments, this can only be considered a "rough" measure of comparison. In general, an effect size of +.25 or more is considered to be educationally significant.
- Ideally, evaluations include findings from matched comparison or large randomly assigned control group studies—or, failing this, compare the standardized test gains of program students to appropriate state- or nationally normed samples.
- Evaluations include data from third-party researchers using independently developed assessments, not only from program developers using program-designed tests.
- Evaluations include and/or compare data from multiple replication sites.

For programs in each category—in this case, schoolwide academic programs—profiles were prepared only for those that came closest to meeting the above criteria. It should be noted, however, that there may be additional programs that qualify for inclusion but for which we were unable to locate adequate data; we hope to be able to include additional profiles for any such programs in future editions. It should be noted, as well, that in an effort to present a broader selection of programs, a few were included that did not quite meet the above criteria. Where this is the case, the preliminary nature of the data has been noted in the profile text.

Finally, both as a courtesy and as a check for accuracy, a draft of each program profile was sent to the appropriate publisher or developer for review. Any new information provided to us during this review process has been incorporated.